

Two New Brazilian Species of *Phyllanthus* (Phyllanthaceae)

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ABSTRACT. Two new Brazilian species of *Phyllanthus* L. are described and illustrated and their morphological affinities are discussed. *Phyllanthus longipedicellatus* M. J. Silva resembles *P. augustinii* Baill. but differs by its leaves oblong-falcate to falcate-asymmetrical with margins obscurely serrulate, and pistillate flowers with patelliform disk. *Phyllanthus salesiae* M. J. Silva is similar to *P. rosmarinifolius* Müller Argoviensis but it differs from the latter by its lacerate stipules, deeply lobed pistillate disk, incurved and bifid style, and seeds with darkish punctations. Both species are endemic to Brazil and known only from a single locality. The systematic position of both species with regard to the sections and subsections of *Phyllanthus* is also discussed.

RESUMO. Duas novas espécies de *Phyllanthus* L. do Brasil são descritas e ilustradas com suas afinidades morfológicas discutidas. *Phyllanthus longipedicellatus* M. J. Silva assemelha-se a *P. augustinii* Baill., mas difere desta pelas folhas oblongo-falcadas a falcado-assimétricas com margens discretamente serruladas e flores pistiladas com disco pateliforme. *Phyllanthus salesiae* M. J. Silva assemelha-se a *P. rosmarinifolius* Müller Argoviensis do qual difere pelas estípulas laceradas, disco pistilado profundamente lobado, estiletos encurvados e bífidos e sementes com pontuações enegrecidas. Ambas as espécies são endêmicas para o Brasil, conhecidas de suas respectivas coleções-tipo e têm suas posições sistemáticas discutidas em relação a seções e subseções de *Phyllanthus*.

Key words: Brazil, IUCN Red List, Phyllanthaceae, *Phyllanthus*.

Phyllanthus L. is a heterogeneous genus in the Phyllanthaceae represented by about 1236 species widely distributed throughout the world (Kathriarachchi et al., 2006). In Brazil, approximately 107 species are found in all vegetation types, especially in rocky fields, caatinga, and cerrado (Silva & Sales, 2007). The taxonomy and identification of the Brazilian species of *Phyllanthus* are problematic because of the tremendous diversity found in the

genus and the overall similarity in habit and floral aspects.

As part of a synopsis of the genus *Phyllanthus* for Brazil (Silva, in prep.), collections originating from Bahia and Minas Gerais states were studied, and their morphological characteristics distinguish them as new species, which are described, discussed, and illustrated here.

1. *Phyllanthus longipedicellatus* M. J. Silva, sp. nov. TYPE: Brazil. Bahia: Ituberá, área da Michelin, Vila 05, 13°43'S, 39°08'W, 24 Sep. 2006 (fl.), R. Valadão de M., J. S. Santos & M. L. Guedes 57 (holotype, ALCB). Figure 1.

Haec species inter species brasilienses *Phyllantho* subsect. *Niruri* quoad ramulos papillosos etiam pedicellos longiores *Phyllantho augustinii* Baill. simillima, sed ab eo lamina foliari minore oblongo-falcata vel asymmetricice falcata atque disco pistillato patelliformi distinguitur.

Monopodial, shrublet ca. 30 cm high; stems erect, terete, papillose in the young parts with blackish trichomes; branching phyllanthoid; cataphylls and cataphyllary stipules 0.8–1 × 0.5–0.7 mm, triangular, not auriculate, escariose, glabrous, margins hyaline; plagiotropic branchlets 6–14 cm with 30 to 57 leaves, axis ca. 0.2 mm wide, slightly flattened and with dark papillae; stipules 1–1.1 mm, lanceolate, acuminate, escarios, glabrous on both surfaces. Leaves sessile, petiole < 1 mm, leaf blades 5–6 × 2.9–3.9 mm, oblong-falcate to falcate-asymmetrical, obtuse-mucronulate, oblique at base, margins obscurely serrulate, membranaceous, adaxial surface dark green, abaxial surface light grayish green, dull, glabrous; venation brochidodromous, midvein slightly prominent abaxially, secondary veins impressed abaxially. Staminate flowers 2 or 3 in cymules at proximal axils, pistillate flowers solitary at distal axils. Staminate pedicel 9–9.2 mm, capillary, finely papillose; sepals 5, 2.1–2.2 × 1.4–1.5 mm, obovate, rounded, membranaceous, 1-nerved; disk segments 5, alternisepalous, obtriangulate and finely papillose; stamens 3, filaments free, 2.4–2.5 mm, anthers ca. 0.2 mm, connective not enlarged, thecae not deeply emarginate, dehiscing horizontally. Pistillate pedicel 10–10.2 mm, capillary, finely papillose; sepals 5, 2.9–3 × 2–2.1 mm, widely elliptic, acute, membra-

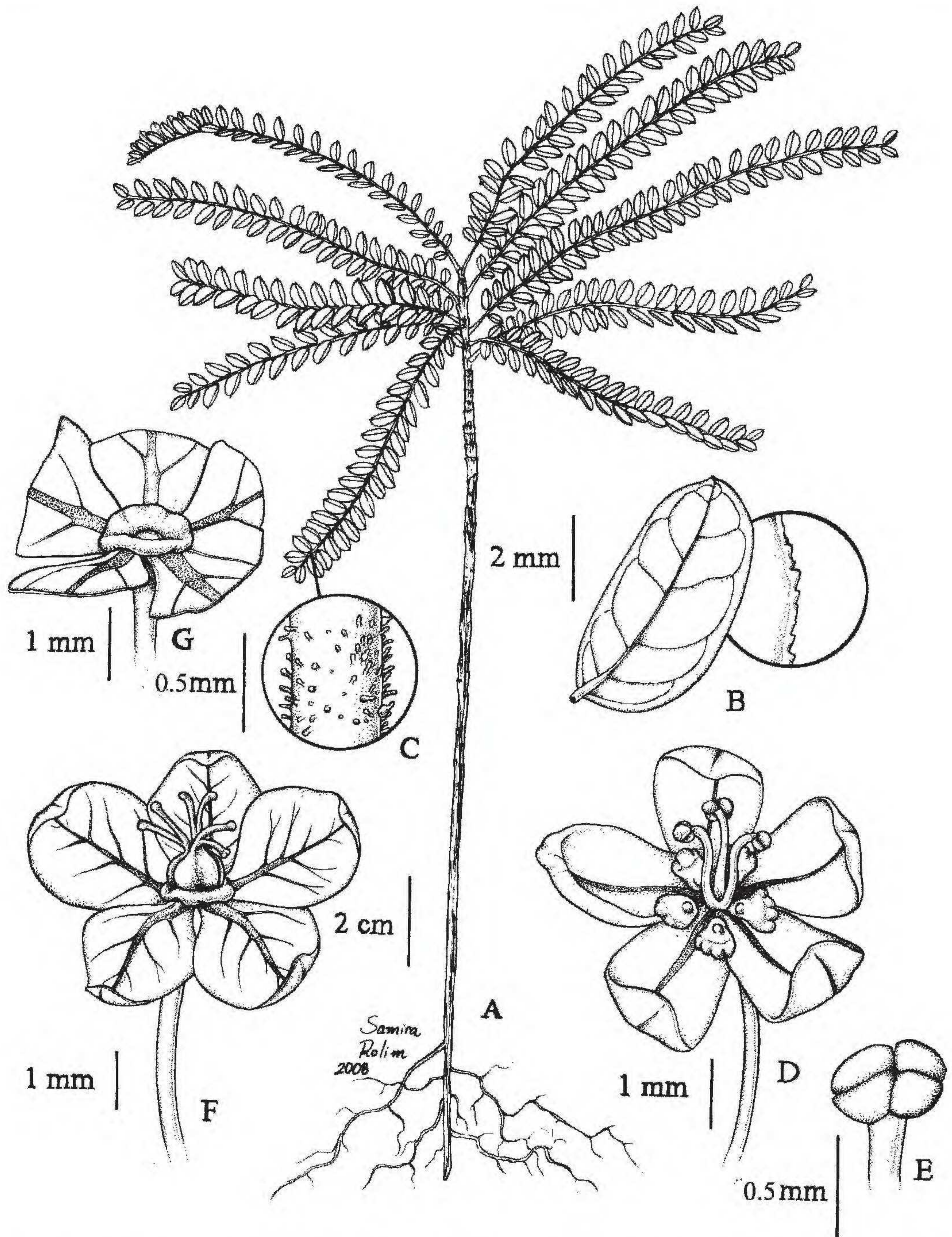


Figure 1. *Phyllanthus longipedicellatus* M. J. Silva. —A. Habit. —B. Leaf, showing the serrulate margins and inequilateral base. —C. Detail of the branch. —D. Staminate flower. —E. Detail of stamen. —F. Pistillate flower. —G. Patelliform disk of the pistillate flower. Drawn from the type, R. Valadão de M., J. S. Santos & M. L. Guedes 57 (ALCB).

naceous, venation pinnate; disk patelliform, margins finely undulate; ovary 0.8–0.9 × 0.9–0.91 mm, style branches 1.2–1.3 mm, free, bipartite, tips obtuse. Fruits and seeds unknown.

Distribution and habitat. *Phyllanthus longipedicellatus* is known only from the type collection, from southern Bahia State in Brazil. It grows in the coastal rainforest (Mata Atlântica) in shaded,

humid areas on clay soils covered by leaf litter.

IUCN Red List category. According to IUCN Red List criteria (IUCN, 2001), the conservation status of *Phyllanthus longipedicellatus* must be considered Data Deficient (DD) because it is known only from the type specimen.

Phenology. *Phyllanthus longipedicellatus* has been collected in flower in September.

Etymology. The specific epithet refers to the long floral pedicels, which are distinctive for the species.

Relationships. The new species, *Phyllanthus longipedicellatus*, can be assigned to *Phyllanthus* sect. *Phyllanthus* subsect. *Niruri* (Webster, 2002a) by its phyllanthoid branching; the leaf blades oblique at the base; and the flowers in unisexual cymes with five sepals, three free stamens horizontally dehiscing, and a segmented disk. Among the other Brazilian species (*P. augustinii* Baillon, *P. niruri*, *P. rosellus* (Müller Argoviensis) Müller Argoviensis, *P. perpusillus* Baillon) of *Phyllanthus* sect. *Phyllanthus* subsect. *Niruri*, only *P. longipedicellatus* resembles *P. augustinii*. Despite the resemblance, *P. longipedicellatus* differs from *P. augustinii* in its leaf blades, with 5–6 × 2.9–3.9 mm, oblong-falcate to falcate-assymetrical, obscurely serrulate margins, pistillate sepals widely elliptic, acute at apex, disk pistillate patelliform with finely undulate margins, and stigma obtuse. In contrast, *Phyllanthus augustinii* possesses leaf blades, 1.9–5.5 × 1–2.9 cm, elliptical to elliptic-obovate, margin foliar entire, pistillate sepals obovate to widely obtrulate, rounded at apex, disk pistillate cupuliform with margins lobed, and stigma capitate.

KEY TO BRAZILIAN SPECIES OF *PHYLLANTHUS* SECT. *PHYLLANTHUS* SUBSECT. *NIRURI*

- 1a. Plants with branches papillose; pedicels of flowers of both sexes 0.9–3 cm; stamens 3, free.
 - 2a. Leaf blades 1.9–5.5 × 1–2.9 cm, elliptical to elliptic-obovate; pistillate disk cupuliform
..... *P. augustinii*
 - 2b. Leaf blades 5–6 × 2.9–3.9 mm, oblong-falcate to falcate-asymmetrical; pistillate disk patelliform. *P. longipedicellatus*
- 1b. Plants with branches glabrous; pedicels of flowers of both sexes 1.8–3.9 mm; stamens 3, free to completely connate in column.
 - 3a. Stamens free to partially connate; seeds > 1.5 mm *P. niruri*
 - 3b. Stamens completely connate; seeds < 1.5 mm.
 - 4a. Plants to 6 cm tall; staminate sepals 0.5–1 mm; seeds 0.85–0.9 mm . . . *P. perpusillus*
 - 4b. Plants 17–40 cm tall; staminate sepals 1.2–1.6 mm; seeds 1.2–1.3 mm
..... *P. rosellus*

2. *Phyllanthus salesiae* M. J. Silva, sp. nov. TYPE: Brazil. Minas Gerais: Passa Quatro, Pico do Itaguaré, Sertão dos Martins, 22°27'52.2"S, 45°04'33.7"W, 1525 m, 2 Oct. 2005 (fl., fr.), L. D. Meireles 2064 (holotype, UEC; isotypes, MO, NY, RB, SP). Figure 2.

Haec species a *Phyllantho rosmarinifolio* Müller Argoviensis foliis distichis marginibus serrulatis et papillosis, stipulis laceratis et disco pistillato dissecto differt.

Shrublet ca. 30 cm high, dioecious; stems erect, sparsely to densely ramified, papillose; branching nonphyllanthoid with lateral branches, persistent and distichous; branchlets terete to slightly flattened, papillose; cataphylls and cataphyllary stipules lacking; stipules 2–2.1 mm, triangular, acuminate, auriculate at base, lacerate margins, escurious, glabrous on both faces, reddish; petioles 1.9–2 mm, cylindrical, greenish, papillose; leaf blades 1.9–4.3 × 0.9–1.9 cm, elliptic, acute, obtuse at base, margins minutely papillose, membranaceous, adaxial surface dark green, abaxial surface opaque, grayish green with papillae concentrated around the midvein; venation brochidodromous, midvein slightly prominent and secondary veins impressed abaxially. Pistillate cymes with 1 or 2 flowers, bracteoles ca. 1 mm, triangular, acuminate, margins slightly serrulate; pedicels 1.7–1.8 mm, terete, visibly articulate; sepals 5, 1.1–1.2 mm, widely elliptic to obovate, acute to obtuse, pinnate venation with whitish margins; disk deeply 5-segmented, margins slightly undulate; ovary 0.4–0.5 × 0.5–0.6 mm, depressed ovate, smooth, styles 3, incurved, bifid, stigma subcapitate. Capsule 2–2.1 × 3.1–3.2 mm, depressed globose, light brown when dry, glabrous, dehiscing loculicidally and septifragally; calyx and style persistent in fruit; seeds 1.8–1.9 × 1.1–1.2 mm, trigonous, brownish, longitudinally finely dark punctate.

Distribution and habitat. *Phyllanthus salesiae* is known only from araucaria forest in Minas Gerais State, Brazil, growing at an altitude of 1525 m at Pico do Itaguaré, with riparian vegetation in clay soils.

IUCN Red List category. According to IUCN Red List criteria (IUCN, 2001), the conservation status of *Phyllanthus salesiae* must be considered Data Deficient (DD) because it is known only from the type specimen.

Phenology. *Phyllanthus salesiae* has been collected in flower and fruit in October.

Etymology. The specific epithet honors Margareth Ferreira de Sales, a Brazilian botanist at Universidade Federal Rural de Pernambuco, who introduced me to the science of plant taxonomy and to the beautiful world of the genus *Phyllanthus*.

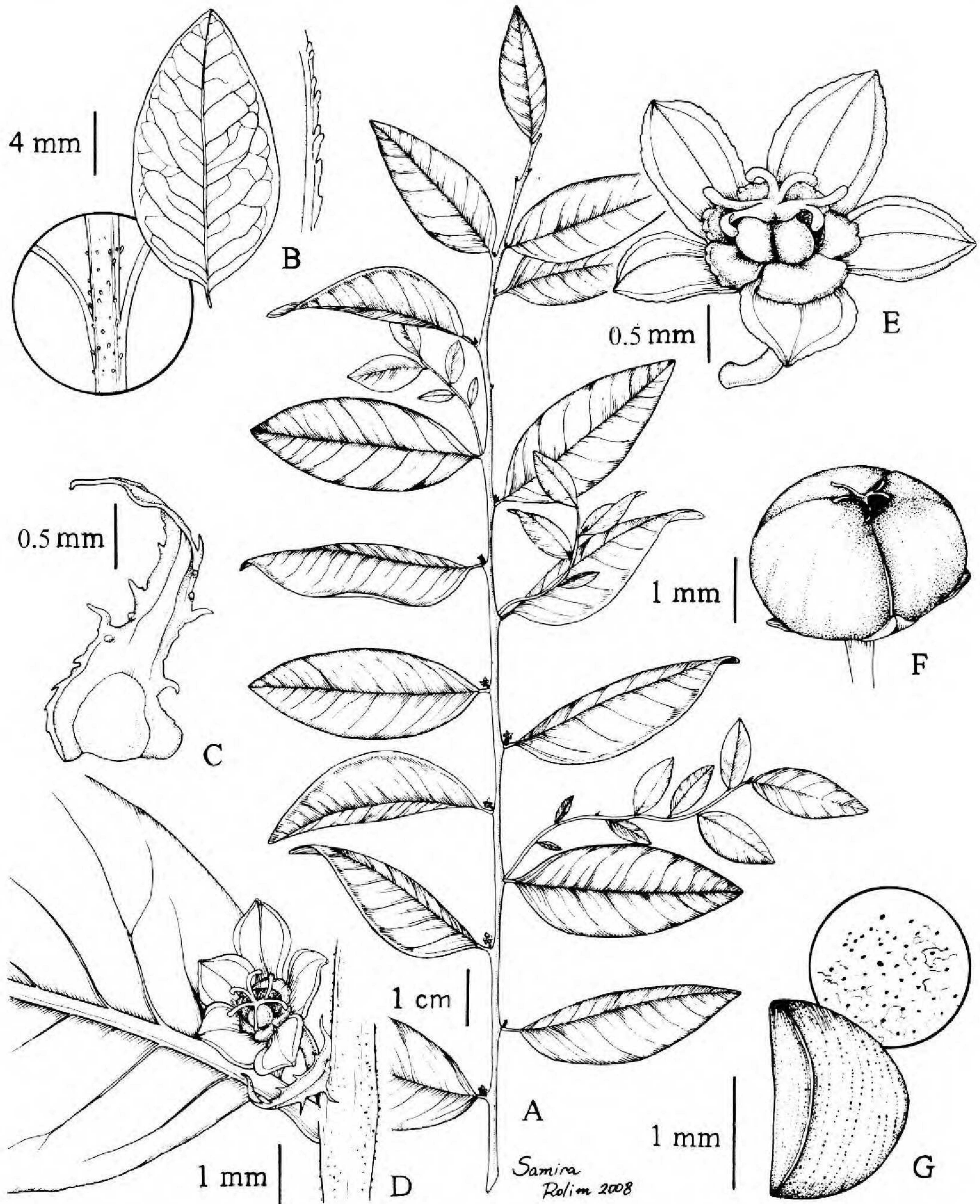


Figure 2. *Phyllanthus salesiae* M. J. Silva. —A. Flowering branch. —B. Leaf, showing the serrulate margins and trichomes at base and along midvein. —C. Stipule. —D. Detail of pistillate flower on branch. —E. Pistillate flower. —F. Fruit. —G. Seed and detail of the punctations on seed surface. Drawn from the type, L. D. Meireles 2064 (UEC).

Relationships. *Phyllanthus* sect. *Antipodanthus* G. L. Webster was established by Webster (2002b). It comprises 15 species, five of which occur in Brazil: *P. dictyospermus* Müller Argoviensis, *P. pinifolius* Bail- lon, *P. ramillosus* Müller Argoviensis, *P. dawsonii* Steyermark, and *P. rosmarinifolius*. According to

Webster (2002b), this section is characterized by shrubs or subshrubs that are monoecious or dioecious with unspecialized branching, papillate branches, spiral phyllotaxy, and persistent stipules. By virtue of its subshrub habit, unspecialized branching, papil- late branches, verruculose seeds, persistent stipules,

Table 1. Comparison of *Phyllanthus salesiae* and related species.

	<i>P. dawsonii</i>	<i>P. dictyospermus</i>	<i>P. pinifolius</i>	<i>P. ramillosus</i>	<i>P. rosmarinifolius</i>	<i>P. salesiae</i>
Sex of plant	monoecious	dioecious	dioecious	dioecious	dioecious	dioecious
Branch indumentum	smooth	smooth	smooth	papillose	smooth	papillose
Leaf blade margins	plane	revolute	revolute	revolute	plane	plane
Seed surface	verruculose	reticulate and verruculose	foveolate- reticulate	reticulate	unknown	punctate
Leaf apex	acuminate	obtuse	mucronate	acuminate	obtuse	acute

and bifid styles, *P. salesiae* belongs to *Phyllanthus* sect. *Antipodanthus*.

Although *Phyllanthus salesiae* is poorly known, it can be positively described because it is the only species of the section with distichous phyllotaxy, leaf blades with serrulate margins, and pistillate flowers with a segmented disk. Among the other Brazilian species of section *Antipodanthus*, *P. salesiae* is morphologically similar to *P. rosmarinifolius*, but the latter differs by its smooth branches and its leaf blades, stipules, and pistillate disk all with entire margins.

The relationships among the Brazilian taxa of section *Antipodanthus* are poorly known, but Table 1 offers morphological characters for the comparison of *Phyllanthus salesiae* with other species of the section.

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